



**U.S. AIR FORCE**

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**“We are not Interested in a  
fair fight.....We want to put  
overwhelming technology  
into the hands of our warrior**



**Gen John Jumper  
Air Force Chief of Staff**

# ***Headquarters U.S. Air Force***

***Integrity - Service - Excellence***



## **AF Scientist and Engineer Functional Manager Update**

**Lt Gen Stephen Plummer  
SAF/AQ**

**13-15 January 2003**

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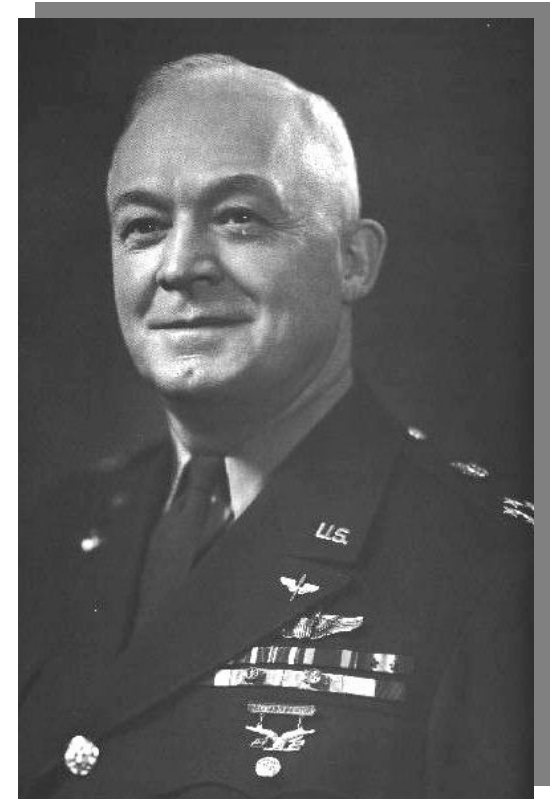


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# ***Gen H. H. Arnold***

***“Remember the seed comes  
first...  
if you are to reap a harvest  
of aeronautical development  
... you must plant the seed  
called experimental  
research”***





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# ***Essence of Battlefield Dominance***



**Precision Engagement**



**Air and Space Superiority**



**Global Attack**



**Information Superiority**

**SCIENTIST & ENGINEERS**



**Rapid Global Mobility**



**Agile Combat Support**

**S&Es CONCEIVE, DEVELOP, SUSTAIN AND OPERATE  
ELEMENTS OF AIR AND SPACE POWER**

***Integrity - Service - Excellence***



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# ***Purpose***

- **Communicate importance of AF S&Es to USAF**
- **Discuss S&E workforce issues**
- **Discuss on-going and planned initiatives**
- **Open dialogue with you . . . S&Es of the USAF**

**Leadership Engaged . . . Working Hard to Revitalize S&E Workforce**

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# ***SECP Recruiting & Retention Panel Findings (Summer 2000)***

- **Forty-Six AF S&E Focus Groups**
  - **Led by Dr Brenden Godfrey, 311 HSW/CD**
- **342 Randomly Selected Officer, Civilians**
- **Site Visits**
  - **WPAFB**
  - **Hill AFB**
  - **Brooks AFB**
  - **AU**
  - **AIA**
  - **Pentagon**

**Feel Unappreciated, Underpaid, Underutilized**

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# ***Focus Group Firmly Held, Pervasive Concerns***

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- **Demonstrate appreciation of S&E roles**
- **Close compensation gap**
- **Provide challenging S&E work**
- **Accommodate upward mobility along dual career paths**
- **Address supervision issues**
- **Reemphasize value of education and training**
- **Address downsizing, outsourcing morale impact**
- **Improve personnel system flexibility**
  - **Reward accomplishment; Remove non-performers**
  - **Overhaul assignment system**
  - **Reduce clearance backlog**





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# ***S&E Workforce Crisis***

- **Sharp downturn in S&E manning**
- **Poorest accession and retention in USAF**
- **Retiring workforce**
- **Our problems are showing in our products!**
  - **Difficulty finding 24 experienced testers for F-22**
  - **Space Launch Broad Area Review**
  - **Class A Mishaps - B-1 Mishap**
  - **SBIR High**

**AFMC/CC Engaged SecAF to Work Issues**

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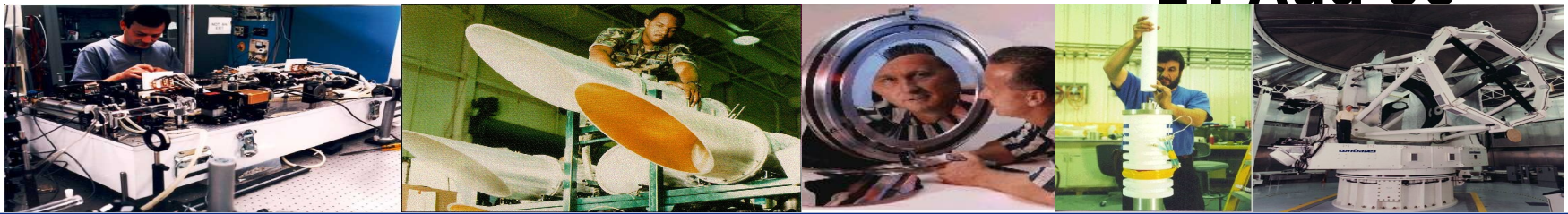


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# Tasking

**“Have a Science and Engineering Career field Summit . . . Purpose is two fold, first to show that leadership is engaged on how to create and maintain an S&E Career Field—this is needed to stop attrition—and second, to try to understand the obstacles we face to recruiting, training, and retaining S&E officers (*and civilians*) and refine some (*short term and*) long term solutions.”**

**F. Whitten Peters, SecAF  
24 Aug 00**

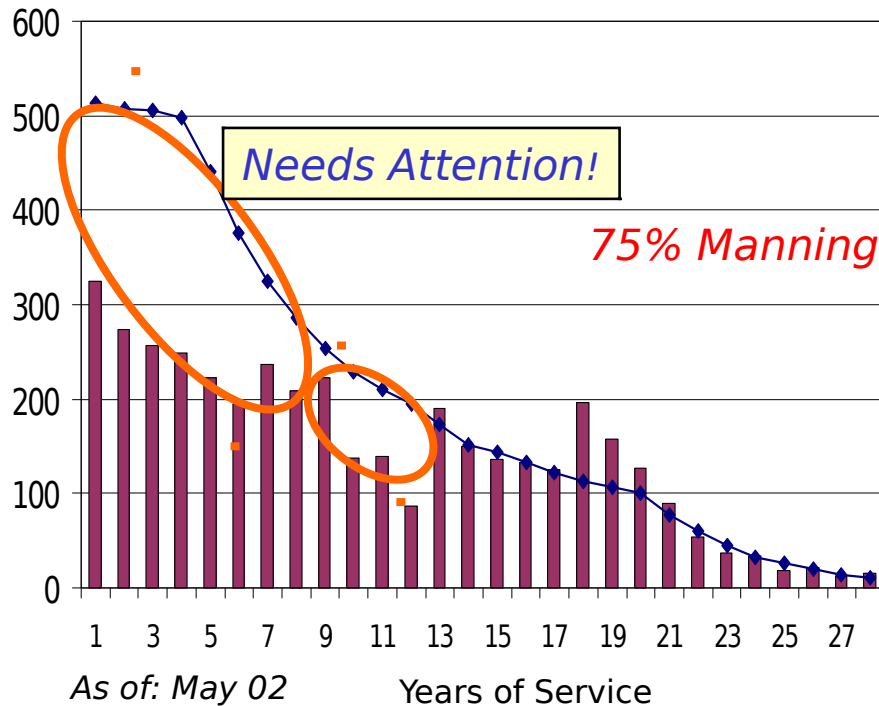


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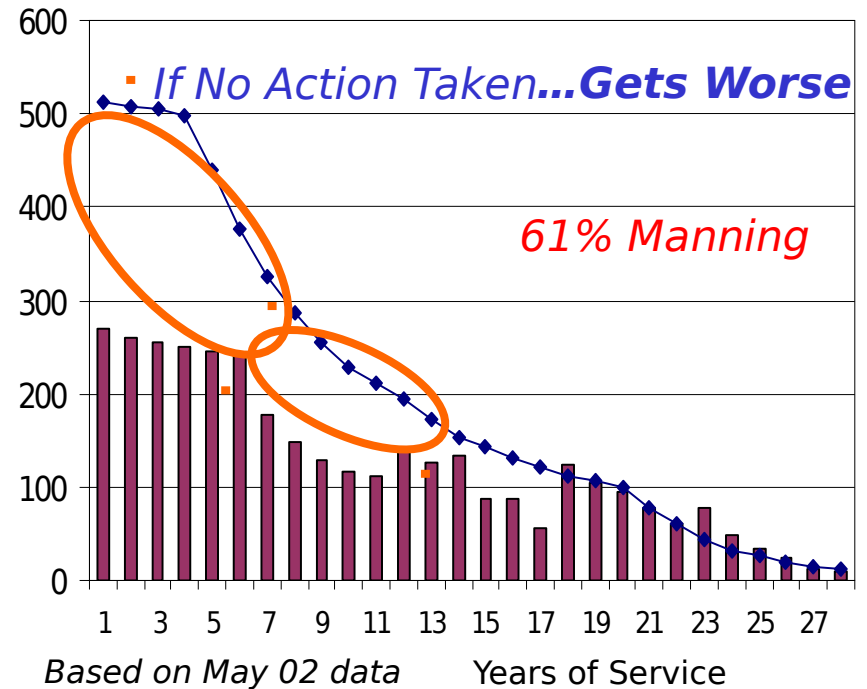


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# Military S&E Sustainment



## ■ Current Military S&E Sustainment and Force Structure

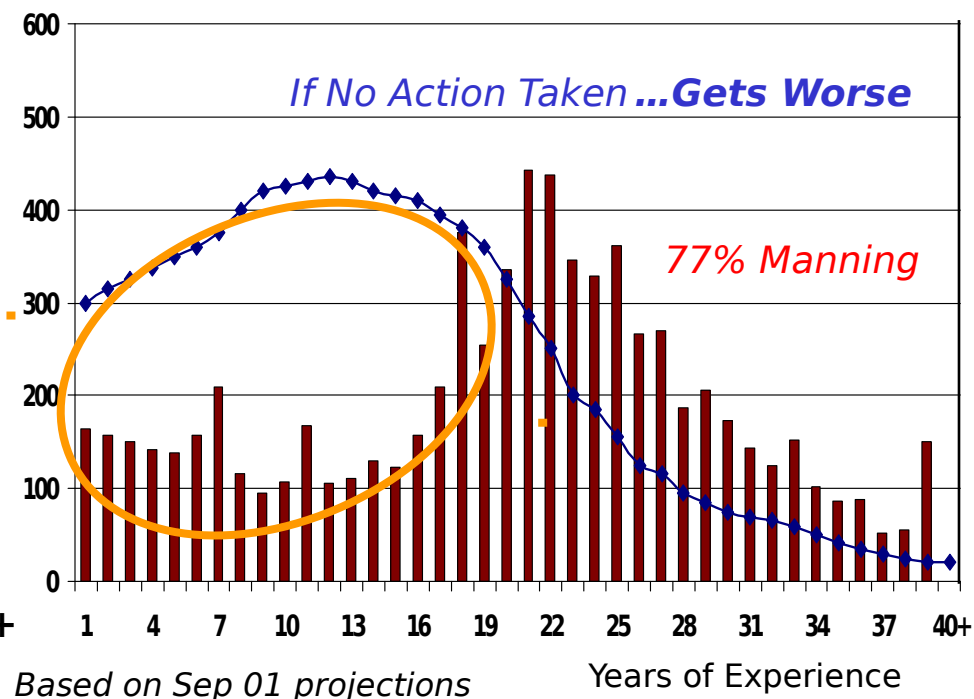
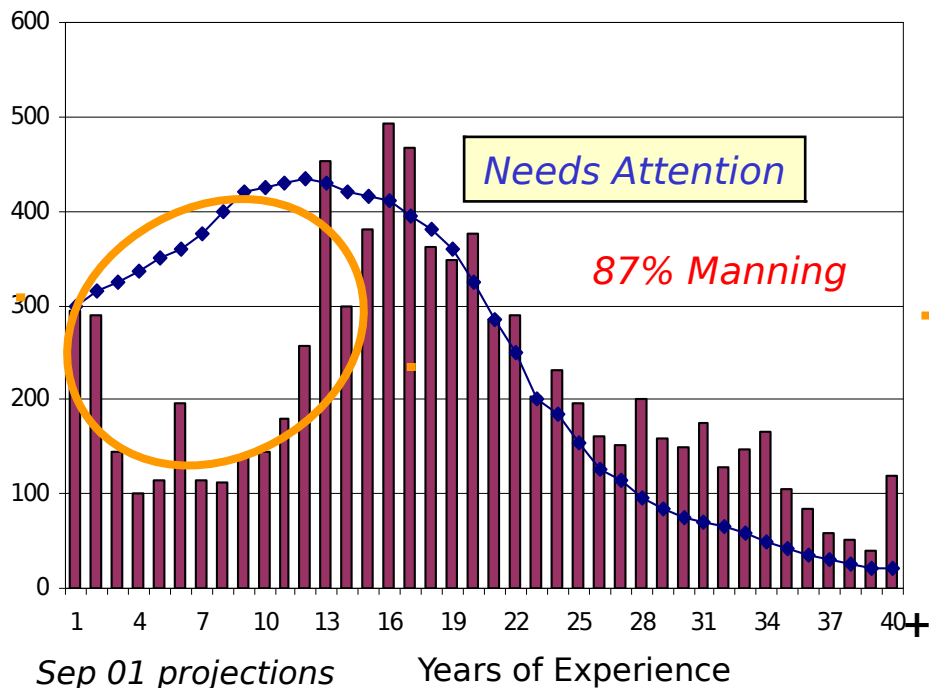


## ■ Military S&E Sustainment Aged Through FY06



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# Civilian S&E Sustainment and Force Structure



■ **Current civilian S&E Sustainment and Force Structure**

■ **Civilian S&E Sustainment Aged Through FY06**



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# ***Summit I Task***

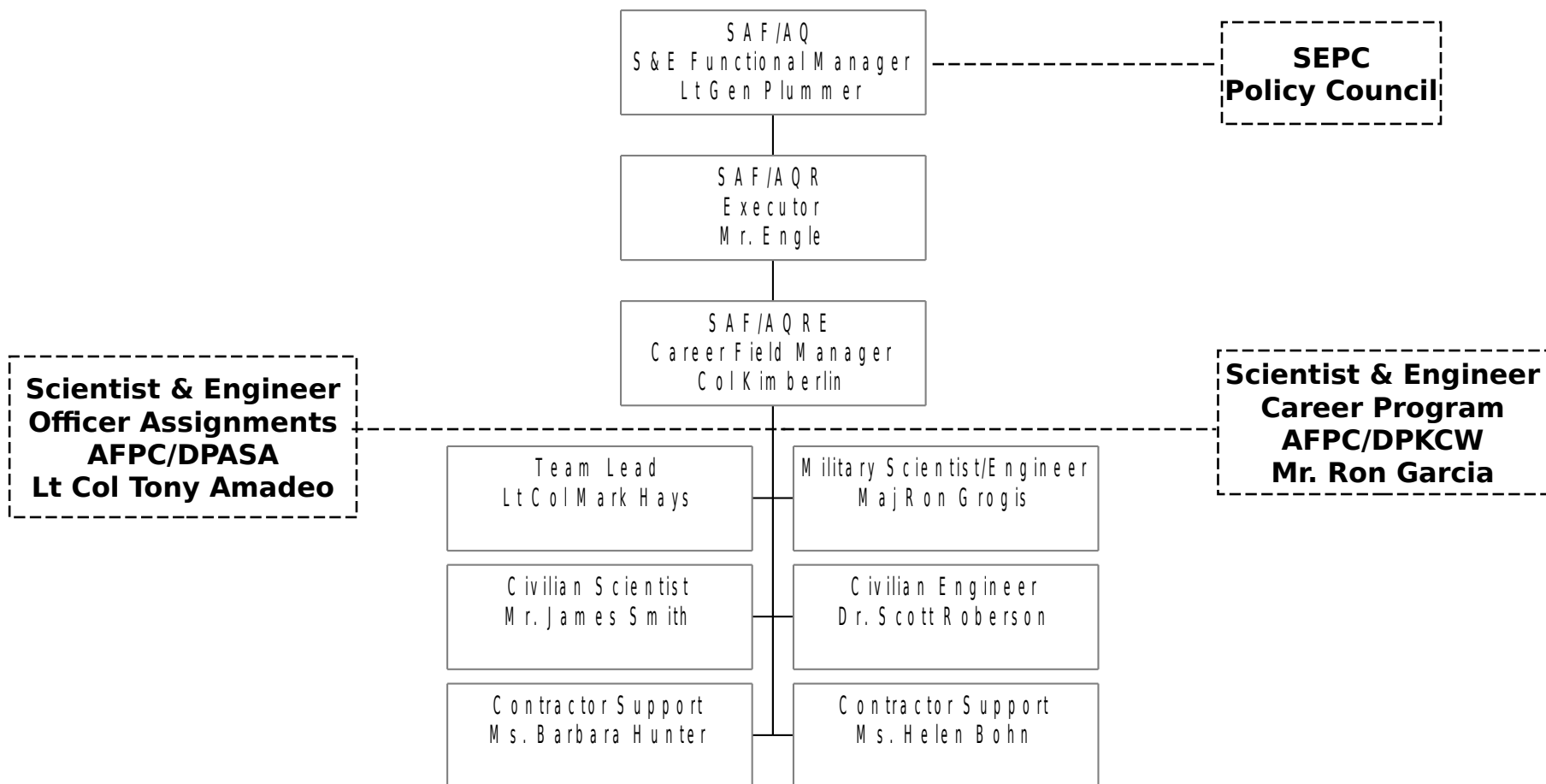
- **Develop S&E CONOPS**
- **Conduct S&E Requirements Review**
- **Identify Workforce Shaping Initiatives**
- **Establish SAF/AQ as Interim Functional Manager**

**Report During S&E Summit II**



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# S&E Functional Manager Organization





# Military S&E Management

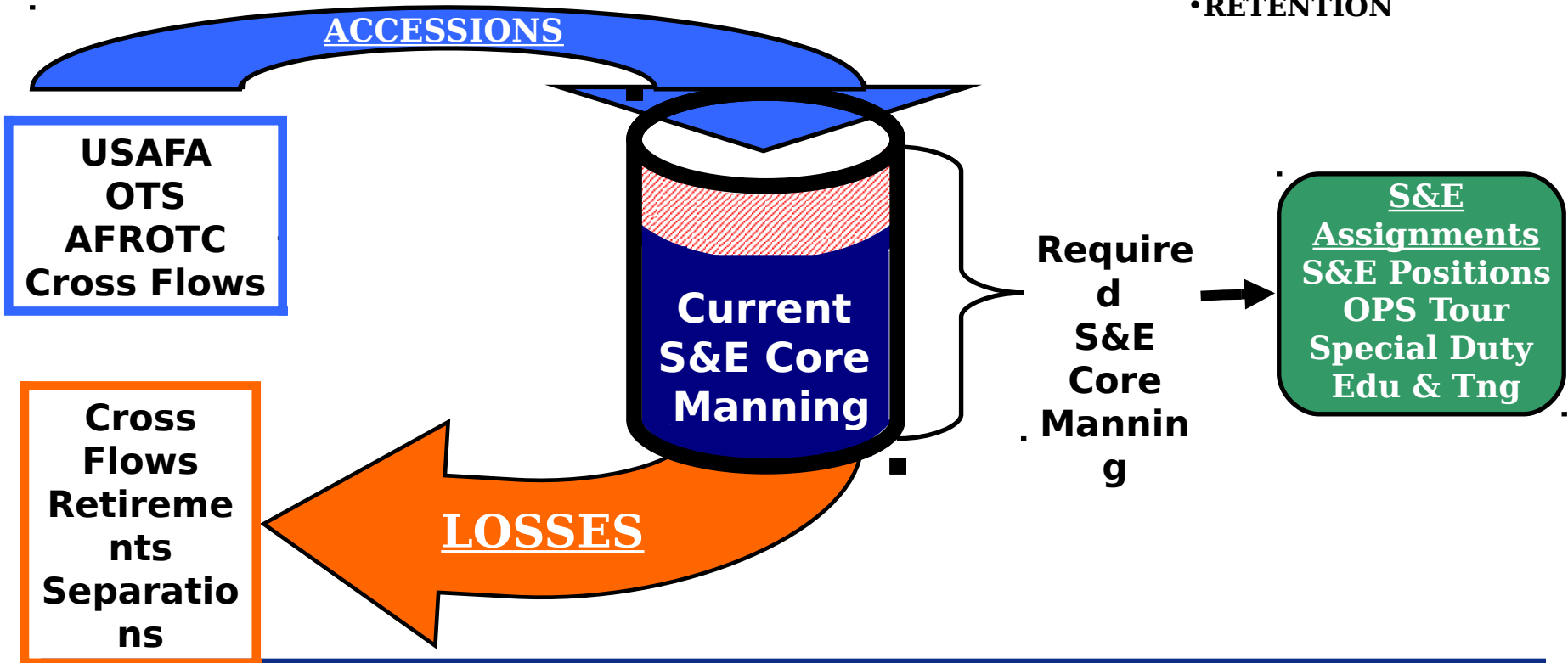
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## Functional Management: Workforce Shaping Policy, Guidance & Advocacy

- ACCESSION TARGETS
- RECRUITING

- CAREER DEVELOPMENT
- ASSIGNMENTS

- EDUCATION & TRAINING
- MENTORING
- RETENTION



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# Civilian S&E Management

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## Functional Management: Workforce Shaping Policy, Guidance & Advocacy

- ACCESSION TARGETS
- RECRUITING

- CAREER DEVELOPMENT
- ASSIGNMENTS

- EDUCATION & TRAINING
- MENTORING
- RETENTION

■ De-centralized personnel system

Direct Hire  
Palace Acquire

ACCESSIONS

Current  
S&E Core  
Manning

Require  
d S&E  
Core  
Manning

S  
S&E  
Positions  
Special  
Duty

LOSSES

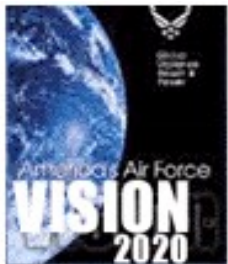
Retirements,  
Separations, Cross  
Flows





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# S&E CONOPS--Where It Fits



## The Approach: Innovation & Adaptation

***"We will continue exploring both science & technology and operational concepts...for evolutionary or revolutionary increases in capability."***



## Guidance

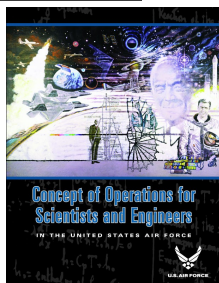
***"U.S. Superiority in Innovation and Science and Technology (S&T) will continue as a cornerstone of our military strategy."***



## Enablers

***"People are the foundation of our aerospace force."***

***"Cutting edge technology is the 'engine room' of aerospace power."***



## S&E Workforce CONOPS

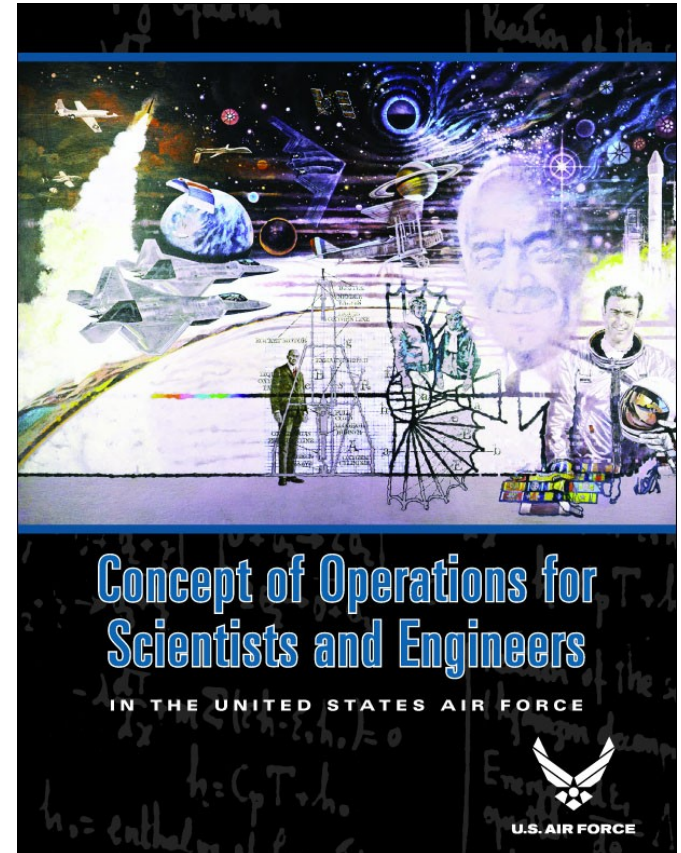
***AF S&Es provide the backbone for achieving technological superiority and enabling AF Core Competencies.***



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# ***S&E CONOPS***

- **USAF Leadership commitment to S&E workforce**
  - Strong in-house S&E capability
  - Battlefield superiority through technological dominance
- **Workforce enablers**
  - Mix: Military, Civilian, & Contractor
  - Education & Training
  - Functional Management
- **Describes S&E resource application**
  - 5 S&E Mission Areas
  - 4 S&E Functions
  - 25 S&E Activities



**Cornerstone Document for S&Es--First of its Kind for USAF**

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# ***S&E Workforce Attributes***

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- **Contractor**
  - **Flexibility**
  - **Rapid response**
  - **Infuse critical skills**
- **Civilian**
  - **Continuity & corporate knowledge**
  - **Technical depth**
  - **Bridge to industry**
- **Military**
  - **Breadth of experience: technical, operational, organizational, products, & missions**
  - **Easily deployed**
  - **Bridge to warfighter**

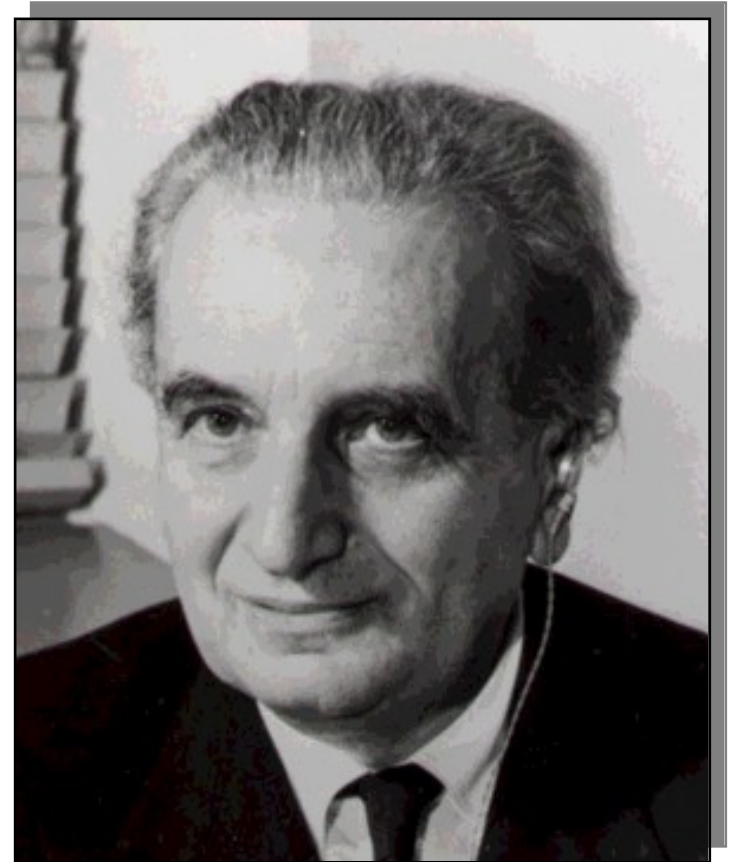


# ***Dr Theodore Von Karman***

**U.S. AIR FORCE**

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***“Scientific results  
cannot be used  
effectively by soldiers  
who have no  
understanding of them,  
and scientists cannot  
produce results useful  
for warfare without an  
understanding of the  
operations.”***





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# ***Requirements Review Results***

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- **S&E Military and Civilian authorizations valid for the “As-Is” state (in the aggregate)**
- **Military, Civilian and Contractor workforce mix about right**
  - **48% Contractor**
  - **37% Civilian**
  - **15% Military**
- **Manning insufficient to fill validated authorizations**



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# Scientists & Engineers: Military & Civilian

	Scientists			Engineers		
	Mil	Civ	Total	Mil	Civ	Total
AAC	4	129	133	127	569	696
AEDC	1	3	4	8	76	84
AFFTC	7	27	34	1	517	671
AFRL	180	608	788		1885	2318
ASC	18	40	58		753	931
ESC	7	2	9		123	300
FOA	10	16	26	3	16	19
HQ	2		2	20	55	75
OC	4		4	47	961	1008
OO	2		65	75	709	784
WR	2		81	50	960	1010
AFSPC	41	79	120	554	408	949
AETC	76	60	136	32	21	53
ACC	75	63	138	207	106	313
USAFA	111	25	136	87	9	96
AIA	54	74	128	298	554	852
AFTAC	40	64	104	21	15	36
AFOTEC	72	36	108	70	42	112
OTHER	201	135	336	370	140	510

69% of all  
authorizations

As Of May 2002

**Scientists: 2,495**

**Engineers: 10,817**



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# Military Initiatives Funding

Initiatives	FY03	FY04	FY05	FY06	FY07
Airman Education & Commissioning Program (AECPP)	\$3.9	\$4.8	\$5.5	\$5.7	\$5.9
Re-recruiting Engineers	\$0.2	-	-	-	-
Critical Skills Retention Bonus (CSRB)	\$14.0	\$13.6	\$15.1	\$14.1	\$14.1
Technical Degree Sponsorship Program (was CSP)	\$1.6	\$3.4	\$3.5	\$3.6	\$3.7
Total	\$19.7	\$21.8 (\$3.4)	\$24.1 (\$3.5)	\$23.4 (\$3.6)	\$23.7 (\$3.7)

FY03  
POM

FY04 POM  
Request

FY03  
Acceleration  
Funded by  
AF/DP



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# ***Airman Education and Commissioning Program***

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- **Purpose:** Target enlisted force as officer candidates
- **Background:**
  - Graduates 30-35 technical degrees per year; increasing funding to produce more
  - Provides tuition plus salaries (E-5 and above)
- **Current Status:**
  - Program on track for increased number of students in FY03





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# ***Re-Recruiting Engineers***

- **Purpose:** Target key year groups of engineers (3-13 CYOS), highlighting benefits of continued service, the rewarding career opportunities that lie ahead for those who stay, and critical role they play in defense of our nation
- **Background:**
  - 30 engineer counselors trained 6-8 Nov 01
  - Meeting with 1500+ engineers; began 26 Nov 01; completed Apr 02
- **Current Status:**
  - Engineers completed; considered very successful
  - Intent is to eventually re-recruit all officers in undermanned career fields
  - Re-recruiters working top issues with AFMC/CC and AF/DP



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# ***Critical Skills Retention Bonus***

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- **Purpose: Target current members with critical skills via retention bonuses**
- **Background:**
  - **FY01 NDAA Authorized program**
    - **Authorizes max of \$200K in a career for critical skills**
  - **AF planning \$10K/yr for 4 years (\$40K total)**
    - **Targeting 4-13 CYOS (5-13 years of commissioned service for USAFA graduates), requiring 4 year agreements**
- **Current Status:**
  - **Pkg approved by SecAF 24 Jan 03**
  - **AF/DP Announcement msg went out 28 Jan 03**
  - **AFPC Implementation msg and instructions forthcoming**



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# ***Technical Degree Sponsorship Program***

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- **Purpose: Recruit juniors and seniors pursuing engineering degrees**
- **Background:**
  - **Enlist as E-3, enter OTS after graduation**
  - **Pay salary and benefits while they complete college**
- **Current Status:**
  - **Accelerated from FY04 to FY03 per SecAF direction**
  - **Funds are available to use starting in FY03**
  - **AF/DP working implementation plans**



# ***One-Year AFROTC Program***

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- **Purpose:** Capture college students with critical skill degrees
- **Background:**
  - **Developed to fix overall ROTC shortfall by allowing college Juniors to sign up for AFROTC in Senior year**
    - **Previously only a 2- or 4-year program**
    - **Open to all degrees, with emphasis on critical AFSCs**
  - **New program, currently planned only for FY02/03**
- **Current Status:**
  - **Generating additional officers, however, 500 increase is only producing about 7 additional S&E graduates in FY02**
  - **AFROTC says will focus harder on tech degrees for FY03**



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# Civilian Initiatives Funding

Initiatives	FY03	FY04	FY05	FY06	FY07
Recruiting Incentives for College Recruits	\$1.8M	\$2.9	\$4.3	\$5.6	\$7.0
Co-op Central Funding	\$0.9	\$1.8	\$2.7	\$3.4	\$4.3
Robust College Recruitment Ofc	\$1.5	\$1.5	\$1.6	\$1.6	\$1.6
Recruiting Bonuses for Journey-Level	\$4.4	\$8.3	\$8.5	\$8.9	\$9.4
Retention Allowances for Journey-Level	\$1.7	\$1.7	\$1.8	\$1.9	\$1.9
Group Retention Allowance	\$2.6*	\$13.1	\$13.7	\$14.4	\$15.0
Total	\$12.9	\$29.3 (\$24.6)	\$32.6 (\$26.6)	\$35.8 (\$26.8)	\$39.2 (\$27.9)

FY03 POM

FY04 POM  
Request

FY03  
Acceleration  
Funded  
by SAF/AQ

FY03  
Acceleration  
Shortfall



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# ***Recruiting Incentives for College Recruits***

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- **Purpose: Target college graduates with critical skills by using recruiting incentives**
- **Background:**
  - **Recruiting bonuses -- 25% of salary**
  - **Student loan repayment**
  - **PCS costs for 1st duty move**
- **Current Status:**
  - **Program funded as part of workforce shaping initiative for FY03**
  - **Process is in place; written local procedures completed**
  - **AF/DP will track to ensure full execution**



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# ***Co-Op Central Funding***

- **Purpose: Target high potential college students for future Air Force employment**
- **Background:**
  - **College students hired while going to school**
  - **Co-op Program funded in FY03 POM**
  - **S&E share is approximately 120 per year across FYDP**
  - **Cost includes salary plus student loan repayment**
- **Current Status:**
  - **Program funded as part of workforce shaping initiative for FY03**
  - **On schedule; Final guidance has gone out to the field**



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# ***Robust College Recruitment Office***

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- **Purpose: Market opportunities to college students and graduates**
- **Background:**
  - **Marketing effort funded at \$200K/yr for all career programs**
  - **Increased recruiting personnel beginning FY03-07**
  - **Increased funding for job fairs (TDY), printed advertising, recruiting emphasis**
- **Current Status:**
  - **Accelerated from FY04 to FY03 per SecAF direction**
  - **AFPC is working with key stakeholders to implement plan. Implementation started Nov 02. First initiatives to be executed include:**
    - **AF S&E recruiting website**
    - **Increased job fair and conference sponsorships**
    - **Printed advertising**





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# ***Recruiting Bonuses - Journey-Level***

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- **Purpose:** Target journey-level civilians with critical skills by using accession bonuses
- **Background:**
  - Up to 25% of basic pay
- **Current Status:**
  - Accelerated from FY04 to FY03 per SecAF direction
  - HQ USAF/DPP guidance issued 10 Oct 02
  - Execution 3Q and 4Q FY03



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# ***Retention Allowances - Journey-Level***

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- **Purpose: Target current journey-level civilian force with critical skills through retention allowance**
- **Background:**
  - **Individual Retention Allowances up to 25% of basic pay**
  - **S&E target -- 150 per year**
- **Current Status:**
  - **Accelerated from FY04 to FY03 per SecAF direction**
  - **HQ USAF/DPP guidance issued 10 Oct 02**



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# ***Group Retention Allowances***

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- **Purpose: Improve pay comparability with private industry for certain difficult-to-fill occupations**
- **Background:**
  - **Group Retention Allowances replaced Special Salary Rates**
  - **Targets GS-05 through GS-12**
    - **Up to 10% of basic pay**
    - **Requires annual recertification**
  - **Corporate Structure agreed to partially fund FY06/07**
  - **Air Staff pursuing FY04/05 funding and shortfall for 06/07**
- **Current Status:**
  - **SecAF approved use of Retention Allowances beginning in FY03**
  - **Authority delegated to installation commanders on 27 Jun 02, based on funding likely to begin 4Q FY03**



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# ***Expansion of Broadbanding***

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- **Purpose: Allow greater pay flexibility based on performance**
- **Background:**
  - **Included in Administration's "Freedom to Manage" legislative proposals**
  - **FY03 Unified Legislative and Budgeting (ULB) initiative asking for expansion beyond current AF demonstration project**
    - **All Services voted to support**
- **Current Status:**
  - **Top priority from OSD/P&R for legislative change**
  - **Likely to be absorbed into Alternative Personnel System legislative language which will give us some flexibility**





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# ***S&E Career Development Guide Objectives***

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- **Formalize Mil & Civ career path guidance**
- **Set mutual understanding of expectations between AF leadership and S&E workforce**
- **Establish desired and required education, training, experience and attributes**
- **Define 6 generic career paths**
  - **3 military**
  - **3 civilian**

**Not a Checklist for Success**



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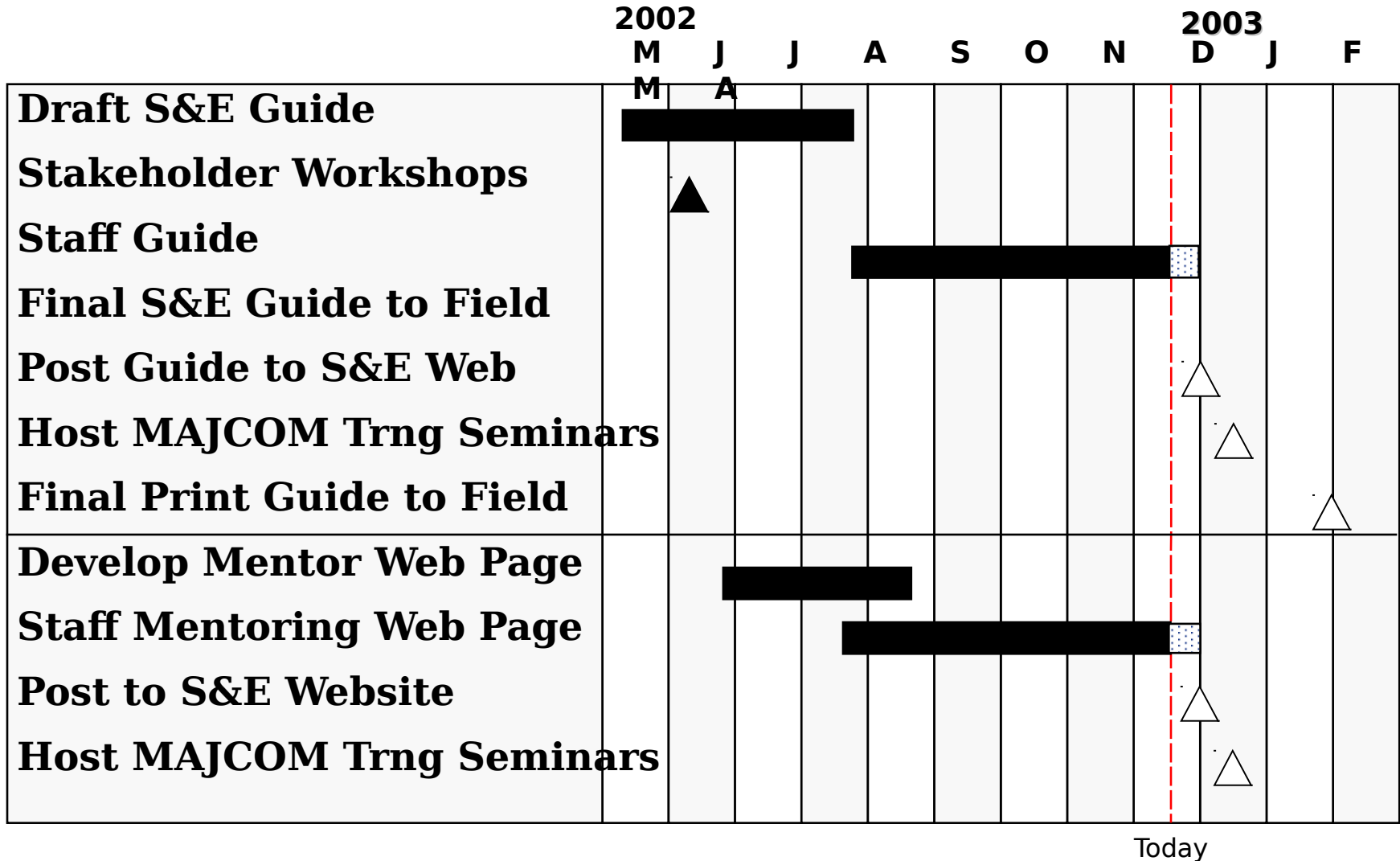
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# ***S&E Mentoring***

- **Commanders stand up “decentralized” program**
  - **Identify local process and make mentors available**
  - **Track/measure progress**
- **SAF/AQ provide guidance and assistance**
  - **Develop web-based tools for S&E mentors**
  - **Publish career field development guidance**



# ***S&E Career Development and Mentoring***







# ***Define the S&E Future State***

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**Build on last year's "As-Is" requirement by forecasting the S&E "To-Be" state in the form and degree requirement**

- **Approach:**
  - **Host seminars with leading authorities**
    - **Academia, Industry, OSD and USAF**
  - **Gain insight and identify most probable S&E future**
- **Goal: Identify gaps between current and future needs**
  - **Set goals & objectives to actively manage to future requirement**
- **Future Scenarios Meeting: 30 Sep - 3 Oct**
- **Next Step: Report to SecAF**



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# ***Re-Recruiting Engineers Background***

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- **SECAF initiated Fall 2001**
- **30 counselors**
  - **Colonels & Lieutenant Colonels**
- **One-on-one, face-to-face interviews**
  - **Core 62E officers with 4 to 13 years of commissioned service**
- **1500+ officers counseled**
  - **~140 individual locations**
  - **Averaged 1 to 1.5 hours per interview**
- **Completed April 2002**



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# ***Key Recommendations Re-Recruiters***

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- **AFPC needs to better match engineers to assignments considering USAF requirements**
- **Require most military engineers to serve an operational tour of duty early in their careers**
- **Ensure military engineers receive adequate mentoring and career support**
- **Develop multiple engineering career paths**



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# ***S&E Summer Study***

## **Re-recruiters briefing to SecAF established S&E Summer Study**

- **Purpose: Investigate ways to improve career management of military S&Es**
- **Tasking: Provide SecAF and CSAF actionable recommendations on ways to improve military S&E workforce management**
- **Recommendations to SecAF/CSAF Oct 02**
- **Next Steps: Work with AF/SLMO to develop S&E  
within CSAF Total Force Development Plan**





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# ***USAF S&E Vision***

A partial view of the Earth from space, showing the curvature of the planet, blue oceans, white clouds, and brown landmasses.

**Air Force Scientists and Engineers . . .  
Guiding, Producing and Sustaining  
Concepts, Technologies and Systems  
that are Key to Aerospace Operations**

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# ***S&E Functional Management Team***

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## **Email**

**[saf.s&e@pentagon.af.mil](mailto:saf.s&e@pentagon.af.mil)**

## **Website**

**[http://www.safaq.hq.af.mil/aqre/s  
e/](http://www.safaq.hq.af.mil/aqre/se/)**







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# Backup



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# ***Critical Skills Accession Bonus***

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- **Purpose: Target potential members with critical skills by using accession bonuses**
- **Background:**
  - **Focused on dev engineers, scientists and critical skills**
  - **Authority provides \$20K ceiling per person 100% lump sum**
  - **New program, authorized in FY02 NDAA**
- **Current Status:**
  - **OSD guidance received 4 Mar 02**
  - **AF/DP looking at \$15-\$20K bonus beginning in FY03**
  - **Recruiting agencies are planning for implementation**
  - **Waiting for passage of FY03 Appropriations Bill**